PIEDMONT BASIC GLADE (TYPIC SUBTYPE)

Concept: Piedmont Basic Glades are open, generally grassy, heterogeneous woodlands or savannas of shallow soils over irregular bedrock (not exfoliated granitic rocks), showing circumneutral or basic influence in their flora. They are generally moderately to steeply sloping and on dry slope aspects. They have more vegetation cover, especially in the herb layer, than the sparsely vegetated cliff communities but are prevented from forming a closed forest by shallow soil and associated xeric conditions. Vegetation is generally patchy and open but often contains substantial tree cover as well as herb- or low-shrub-dominated areas. Open rock areas are limited.

The Typic Subtype covers all examples not fitting the distinctive characteristics of the Falls Dam Slope Subtype.

Distinguishing Features: All of the glade communities are distinguished from forest communities by having a persistently open tree canopy, ranging from woodland structure to sparser. The abundance of *Juniperus virginiana* in most examples is also not characteristic of forest communities. Glades are distinguished from Xeric Hardpan Forest by having less tree cover and having substantial shallow soil and bedrock. They are distinguished from Piedmont Cliff, Granitic Flatrock, and Low Elevation Rocky Summit communities by having soil with substantial herbaceous or shrub cover over most of the area, and limited areas of bare rock. Plants characteristic of bare rock, such as *Phemeranthus teretifolius (=Talinum teretifolium), Croton wildenowii (Crotonopsis elliptica), Bryodesma (Selaginella) rupestre*, and crustose lichens, may be present but are scarce and limited to the small areas of open rock outcrop.

Piedmont Basic Glades are distinguished from Piedmont Acidic Glades by having multiple species characteristic of circumneutral or basic sites. Multiple species characteristic of less acidic soils, such as *Fraxinus americana, Cercis canadensis, Rhus aromatica, Myriopteris (Cheilanthes) tomentosa*, and *Myriopteris lanosa* are present. Species such as *Chionanthus virginicus*, and *Carya* spp. are typically more abundant.

The Typic Subtype constitutes all but one of the known examples. The Falls Dam Slope Subtype is distinguished from it by having lower herb cover, extensive ground cover by slate fragments, and evidence of substrate instability. A few examples of the Typic Subtype have slate or shale substrate and have some ground cover by rock fragments, but it is less extensive.

Synonyms: Synonyms: *Juniperus virginiana var. virginiana - Ulmus alata / Schizachyrium scoparium* Woodland (CEGL004443). Piedmont Mafic Cliff (in part), Piedmont Calcareous Cliff (in part) (3rd Approximation).
Ecological Systems: Southern Piedmont Glade and Barrens (CES202.328).

Sites: Piedmont Basic Glade (Typic Subtype) communities usually occur on moderate to steep slopes that face south or west, but they may occur on other aspects or may be flat. Bedrock is near the surface beneath most of the community, but shallow soil covers most of it. The geologic substrate is generally mafic igneous or metamorphic rocks such as basalt, meta-basalt, diabase, or gabbro. Less frequently, examples may occur on meta-mudstone or even on falic rocks such

as rhyolite or granite. The source of the basic character in these sites is not clear but may come from intrusions, xenoliths, or leaching of material from adjacent substrates.

Soils: Glade soils are shallow, with bedrock near the surface. The soil material includes rock fragments and early weathering products along with organic matter and washed-in material. These soils may consist of shallow mats or deep fill in crevices and are often extremely heterogeneous. Vegetation suggests relatively high pH and base saturation, but this is not well documented. Soils in glades generally are not distinguished in soil mapping but are treated as inclusions in other map units.

Hydrology: The shallow soils dry quickly between rains and are prone to extreme drought stress. There is a possibility of small seepage patches on the edges, but this appears to be uncommon.

Vegetation: The vegetation of Piedmont Basic Glades is usually patchy and heterogeneous; it may range from an open woodland or savanna to nearly treeless. The herb layer is generally the dominant stratum, though a few examples may have limited herb cover and most have small openings with bare rock. *Schizachyrium scoparium* is most often dominant, but *Danthonia spicata, Danthonia sericea,* or less often *Piptochaetium avenaceum, Melica mutica,* or other species may dominate large patches. The most constant herbs in CVS plot data are *Asplenium platyneuron, Hieracium venosum, Dichanthelium dichotomum* var. *dichotomum*, *Dichanthelium depauperatum*, *Pleopeltis michauxiana*, and in rocky areas, *Myiopteris tomentosa* and *Myriopteris lanosa*. Other herbs at least fairly frequent in CVS plot data or in site descriptions include *Commelina erecta, Cunila origanoides, Tephrosia virginiana, Coreopsis verticillata, Micranthes virginiensis, Opuntia mescantha* var. *mescantha* (*humifusa*), *Hypericum gentianoides, Antennaria plantaginifolia, Ruellia carolinensis, Oxalis dilleniid, Oxalis stricta, Lespedeza virginica, Nuttallanthus canadensis, Dichanthelium laxiflorum*, and *Andropogon gerardii*. The flora often includes small numbers of both species of rock outcrops, such as *Phemeranthus teretifolius* or *Croton wildenowii*, and ruderal species, such as *Ambrosia artemisiifolia, Conyza canadensis*, or *Phytolacca americana*. Other widespread species of open areas, such as *Solidago odora, Ionactis linariifolius, Parthenium integrifolium,* and *Scleria oligantha,* may be present.

The open-to-sparse tree layer is usually dominated by *Juniperus virginiana. Quercus stellata, Carya glabra, Fraxinus biltmoreana* (*americana*), or *Quercus montana* may be codominant or occasionally dominant. Other frequent trees include *Ulmus alata, Pinus virginiana, Carya glabra, Carya tomentosa, Chionanthus virginicus, Acer leucoderme, Acer rubrum, Pinus echinata*, and *Ostrya virginiana*. Less frequent but characteristic tree species include *Quercus marilandica, Cercis canadensis, Diospyros virginiana, Carya cordiformis*, and *Acer floridanum*. Shrubs are generally sparse but may form denser patches. *Vaccinium arboreum* is the most frequent species, and *Rhus aromatica, Styrax grandifolia, Viburnum rufidulum, Celtis tenuifolia,* and many other species may be present. Vines may be abundant in parts, especially *Muscadinia rotundifolia*, but also *Gelsemium sempervirens, Toxicodendron radicans, Parthenocissus quinquefolia, Smilax bona-nox, Lonicera sempervirens,* and others.

Range and Abundance: Ranked G2. Examples are scattered through the Piedmont, excepting the foothills, but are most abundant in the Carolina Slate Belt geologic region. This community is also known in Virginia. It has not been reported in South Carolina but should be sought.
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Associations and Patterns: Piedmont Basic Glades occur as small patches. They are surrounded by forest communities, usually Dry Basic Oak–Hickory Forest or Dry-Mesic Basic Oak–Hickory Forest. They may less often be associated with acidic communities such as Dry Oak–Hickory Forest.

Variation: The Typic Subtype appears to be variable among sites as well as very heterogeneous within sites. Variants have not been recognized but are likely with further study. Some of the known occurrences that may warrant distinct variants or even subtypes are those on slate slopes in Stanley and Anson counties and on Cedar Mountain in Rockingham County. Both show some of the slope instability that characterizes the Falls Dam Slope Subtype but do not seem to fit well with it.

Dynamics: Dynamics are likely to be similar to those in the Piedmont Acidic Glade and to glades and barrens in general. This includes potentially an important role for drought in keeping woody vegetation from becoming dense, and an important role for fire.

Comments: The Typic Subtype is well documented in both plot data and site descriptions. As with other glade and barrens communities, it can be difficult to confidently assign plots to them if the vegetation structure and substrate are not recorded in detail. Though rare, these communities appear to be more numerous than the Piedmont Acidic Glades, despite the much greater abundance of acidic rocks. It is unclear why this is true.

The relationship of the two subtypes and of the variation associated with slate and shale substrates needs further investigation.

Rare species:
Vascular plants: *Anemone berlandieri*, *Baptisia alba*, *Boechera missouriensis*, *Eurybia mirabilis*, *Gillenia stipulata*, *Helianthus laevigatus*, and *Sedum glaucophyllum*.

References: